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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/797,743
Filing Date: March 09, 2004
Appellant(s): KII, YASUYUKI

Steven M. Jensen
For Appellant

EXAMINER'S ANSWER

This is in response to the reply brief filed 28 July 2008 appealing from the Office action mailed 6 September 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6744430	SHIMIZU	6-2004
5517603	KELLY ET AL.	5-1996
6402615	TAKEUCHI	6-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3, 4, 6, and 9-11 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,744,430 to Shimizu.

3. With regard to claim 1, Shimizu discloses "a graphic processing apparatus (*Fig. 10*) having

a. a Z-buffer memory (*Z value buffer 234*) storing a Z value representing a depth of a display object when seen from a visual point per pixel (*lines 17-19 of column 19: "The Z value buffer 234 stores pixel Z values for each layer prior to the receipt of the region determination results for each such layer."*) and

b. a pixel memory (*frame buffer RAM 70*) storing color data on each pixel (*lines 17-19 of column 19: "A frame buffer processor 83 consolidates the color data determined by the shading processor 79 into separate frames, subjects those data to treatment (blending), and outputs images for one frame. A dedicated frame buffer RAM 70 provides working memory for the frame buffer processor 83 and stores frame data."*) for creating an image of a shadowed three-dimensional object having a shadow produced by

obstructing a ray of light from a light source by the three-dimensional object (*Fig. 1*), comprising:

i. a visual-point coordinate conversion processing section (*pixel data generator 64 described in lines 51-55 of column 17*) for upon input of graphic data on normal polygons constituting each object including the three-dimensional object (*normal polygon 7 in Figure 2; normal polygon c shown in Figure 26A*) and on shadow polygons constituting a shadow volume (*3c and 3b in Figure 2; a1 "front surface" of volume ID_0 line 4 of column 22; polygon a2 "back surface" of volume ID_0 in line 4 of column 22*) that defines a shadow space produced by obstructing the ray of light from the light source by the three-dimensional object (*lines 10-12 of column 6: "This light volume 3 is a virtual light space that is produced by the light source 1 and the polygon (object) 2."; equation (1); Fig. 1; lines 24-26 of column 20: "In FIG. 26A, the triangular column a is described as an example of a shadow volume, and the square column b as an example of a modifier volume."*), converting the graphic data to visual-point coordinates including x-coordinates and y-coordinates and depth values (*lines 44-47 of column 17 (emphasis added): "The apex data are configured by <u>screen coordinates (x, y)</u> that indicate positions on the display screen, <u>Z values that indicate depth</u>..."; lines 30-33 of column 11: "...the pixel data comprising the polygon ID, polygon attribute information, screen coordinates (Sx, Sy), Z values..."; Figure 11; see also lines 47-53 of column 10*), and

ii. outputting the obtained visual-point coordinates and depth values (*pixel data of lines 30-33 of column 11*) in a state of being sorted into those of front-facing shadow polygons that face front (*3c in Figure 2; a1 "front surface" of volume ID_0 line 4 of column 22*), those of back-facing shadow polygons that face back (*3d in Figure 2; polygon a2 "back surface" of volume ID_0 in line 4 of column 22*) when seen from the visual point (*view point 4*), and those of the normal polygons (*lines 59-64 of column 17: "The sort preprocessor 110 sorts the pixel data sent from the pixel data generator 64, according to Z value, and executes fragment Z buffer processing that extracts the polygon ID closest to the front for each pixel, in each layer 1 to n as viewed from the direction of the view point"; lines 12-14 of column 18: "The region buffer controllers 120-1 to 120-n determine whether bound layer data input are a <u>volume polygon</u> (shadow volume, modifier volume) or an <u>ordinary polygon</u>..."; lines 20-28 of column 18 (emphasis added): "The method adopted for updating the region buffers...based on the results of <u>volume polygon front/back determinations</u>..."*); and

iii. a hidden surface removal and shadowing processing section (*sort preprocessor, attribute controller 140, and frame buffer processor 83*) for

(1) obtaining a coordinate region that is positioned behind the front-facing shadow polygons and in front of the back-facing shadow polygons when seen from the visual point based on the visual-point coordinates (*lines 49-51 of column 18: "The region buffers 220-1 to 220-n store information on whether something is inside or outside a volume (region),*

pixel by pixel."; see the explanation below), the depth values and the Z-buffer memory after hidden surface removal processing by Z-buffer method is performed on the normal polygons (*lines 25-27 of column 21: "The sort preprocessor (Z buffer) 110 outputs the polygon ID positioned foremost for each pixel, layer by layer."*), and

(2) updating color data on pixels in the pixel memory corresponding to the obtained coordinate region to shadow color data (*lines 28-32 of column 17: "A frame buffer processor 83 consolidates the color data determined by the shading processor 79 into separate frames, subjects those data to treatment (blending), and outputs images for one frame."*).

4. With regard to claim 1, Shimizu discloses pixel data is configured by the screen coordinates (*lines 52-55 of column 17*); therefore, the region information recorded in the buffer on a pixel-by-pixel basis defines a coordinate region.

5. With regard to claim 1, in the Shimizu reference, if a polygon is inside a volume, then it is behind the front facing shadow polygons and in front of the back facing shadow polygons relative to a viewpoint, and vice versa. See e.g. Figure 26A. Since a polygon inside a volume is described on a pixel-by-pixel basis (*lines 49-51 of column 18; lines 57-59 of column 22: "Because this region is inside volume ID_0, the light ID_1 for the relevant pixel(s) is invalidated, based on the volume data type shadow, and output is affected."; lines 10-12 of column 18: "The region buffers 130-1 to 130-n store information (flags) as to whether something is inside or outside a volume (region)."*), Shimizu discloses obtaining "a coordinate region positioned behind the front facing shadow polygons and in front of the back facing shadow polygons." Shimizu's

front and back facing surfaces have surface normals defining the surface's orientation (*line 10 of column 10*).

6. With regard to claim 3, Shimizu discloses "if a plurality of the shadow volumes are present, the hidden surface removal and shadowing processing section performs processing concerning the shadow polygons per shadow volume" (*lines 15-17 of column 18 (emphasis added): "When a <u>volume polygon</u> (<u>shadow volume</u>, modifier volume) has been input, the region buffer controllers 120-1 to 120-n update the region buffers"; lines 20-23 of column 18 (emphasis added): "The method adopted for updating the region buffers may be a method wherewith in and out are inverted, in pixel units, <u>every time a volume polygon is input</u>..."; see also attribute modulator B: lines 53-55 of column 18 and lines 59-61 of column 18*).

7. With regard to claim 4, Shimizu discloses "a graphic processing apparatus (*Fig. 10*) having

c. a Z-buffer memory (*Z value buffer 234*) storing a Z value representing a depth of a display object when seen from a visual point per pixel (*lines 17-19 of column 19: "The Z value buffer 234 stores pixel Z values for each layer prior to the receipt of the region determination results for each such layer."*) and

d. a pixel memory (*frame buffer RAM 70*) storing color data on each pixel (*lines 17-19 of column 19: "A frame buffer processor 83 consolidates the color data determined by the shading processor 79 into separate frames, subjects those data to treatment (blending), and outputs images for one frame. A dedicated frame buffer RAM 70 provides working memory for the frame buffer processor 83 and stores frame data."*) for creating an image of a shadowed three-dimensional object having shadows produced by

obstructing a ray of light from a light source (*1 shown in Figure 1*) by the three-dimensional object (*2 shown in Fig. 1*), comprising:

iv. a normal polygon conversion section (*pixel data generator 64 described in lines 51-55 of column 17*) for upon input of graphic data on normal polygons constituting each object including the three-dimensional object, converting the graphic data to visual-point coordinates including x-coordinates and y-coordinates and depth values (*lines 44-47 of column 17 (emphasis added): "The apex data are configured by <u>screen coordinates (x, y)</u> that indicate positions on the display screen, <u>Z values that indicate depth</u>..."; lines 30-33 of column 11: "...the pixel data comprising the polygon ID, polygon attribute information, screen coordinates (Sx, Sy), Z values..."; Figure 11; see also lines 47-53 of column 10*);

v. a shadow polygon conversion section (*pixel data generator 64 described in lines 51-55 of column 17*) for upon input of graphic data on shadow polygons constituting a shadow volume that defines a shadow space produced by obstructing the ray of light from the light source by the three-dimensional object (*3 shown in Fig. 1*),

(3) converting the graphic data to visual-point coordinates including x-coordinates and y-coordinates and depth values (*lines 44-47 of column 17 (emphasis added): "The apex data are configured by <u>screen coordinates (x, y)</u> that indicate positions on the display screen, <u>Z values that indicate depth</u>..."; lines 30-33 of column 11; Figure 11*), and

(4) outputting the obtained visual-point coordinates and depth values (*pixel data of lines 30-33 of column 11*) in a state of being sorted into those of front-facing shadow polygons that face front (*3c in Figure 2; a1 "front surface" of volume ID_0 line 4 of column 22*), those of back-facing shadow polygons that face back (*3d in Figure 2; polygon a2 "back surface" of volume ID_0 in line 4 of column 22*) when seen from the visual point (*view point 4*; *sort processing described in lines 59-64 of column 17; lines 12-14 of column 18; lines 20-28 of column 18*);

vi. a normal polygon processing section (*sort preprocessor, attribute controller 140, and frame buffer processor 83*) for performing hidden surface removal processing by Z-buffer method on the normal polygons based on the visual-point coordinates and the depth values of the normal polygons (*lines 25-27 of column 21: "The sort preprocessor (Z buffer) 110 outputs the polygon ID positioned foremost for each pixel, layer by layer."*) and updating color data and a Z value of each pixel in the pixel memory and the Z-buffer memory based on the processing result (*lines 25-27 of column 21: "The sort preprocessor (Z buffer) 110 outputs the polygon ID positioned foremost for each pixel, layer by layer."; lines 28-32 of column 17: "A frame buffer processor 83 consolidates the color data determined by the shading processor 79 into separate frames, subjects those data to treatment (blending), and outputs images for one frame."*);

vii. a back-facing shadow polygon processing section (*sort preprocessor, attribute controller 140, and frame buffer processor 83*) for obtaining a

coordinate region positioned in front of the back-facing shadow polygons (*lines 9-11 of column 20 (emphasis added): "The triangular column a is defined by five polygons, namely by a front surface a1, <u>back surface a2</u>..."; lines 25-27 of column 20: "In FIG. 26A, the triangular column a is described as an example of a shadow volume..."; the operations of the region buffers for determining a region for back surface a2 are illustrated Figures 29, 30, 31, 34, 37*) when seen from the visual point based on the visual-point coordinates (*lines 49-51 of column 18: "The region buffers 220-1 to 220-n store information on whether something is inside or outside a volume (region), pixel by pixel."; lines 10-12 of column 18*) and the depth values of the back-facing shadow polygons and on the Z values after the hidden surface removal processing is performed (*lines 22-29 of column 21: "Next, with a delineation start instruction...The sort preprocessor (Z buffer) 110 outputs the polygon ID positioned foremost for each pixel, layer by layer."*);

viii. a shadow flag memory (*region buffers 130-1 to 130-n*) for storing a flag value representing a visual-point coordinate positioned in front of the back-facing shadow polygons (*lines 10-12 of column 18: "The region buffers 130-1 to 130-n store information (flags) as to whether something is inside or outside a volume (region)."*); and

ix. a front-facing shadow polygon processing section (*sort preprocessor, attribute controller 140, and frame buffer processor 83*) for obtaining a coordinate region positioned behind the front-facing shadow polygons (*lines 9-11 of column 20 (emphasis added): "The triangular column a is defined by five*

polygons, namely by a front surface a1, back surface a2..."; lines 25-27 of column 20: "In FIG. 26A, the triangular column a is described as an example of a shadow volume..."; the operations of the region buffers for determining a coordinate region for front surface a1 are illustrated Figures 29, 30, 31, 34, 37) and in front of the back-facing shadow polygons when seen from the visual point based on the visual-point coordinates (*lines 49-51 of column 18*) and the depth values of the front-facing shadow polygons and on the Z values after the hidden surface removal processing is performed (*lines 22-29 of column 21*) and on the flag value and for updating color data on pixels in the pixel memory corresponding to the obtained coordinate region to shadow color data (*Fig. 44; lines 57-59 of column 22: "Because this region is inside volume ID_0, the light ID_1 for the relevant pixel(s) is invalidated, based on the volume data type shadow, and output is affected.""; lines 11-15 of column 23: "The pixel data for the polygon c described earlier pass through a layer controller 77 and attribute modulator 78, and a pixel delineation such as diagrammed in FIG. 45 is made by the shading processor 79, texture processor 80, and frame processor 83."*).

8. See explanation following the rejection of claim 1, which applies equally to claim 4.

9. With regard to claim 6, Shimizu discloses "if a plurality of the shadow volumes are present, the back-facing shadow polygon processing section and the front facing shadow polygon processing section perform processing concerning the shadow polygons per shadow volume" (*lines 15-17 of column 18 (emphasis added): "When a volume polygon (shadow volume, modifier volume) has been input, the region buffer controllers 120-1 to 120-n update the region buffers"*;

lines 20-23 of column 18 (emphasis added): "The method adopted for updating the region buffers may be a method wherewith in and out are inverted, in pixel units, every time a volume polygon is input..."; see also attribute modulator B: lines 53-55 of column 18 and lines 59-61 of column 18).

10. Claim 9 recites limitations similar in scope to those presented in claim 4 as a method. Shimizu invention is embodied in a method as shown in line 10 of column 2. The limitations of claim 9 are rejected with the rationale presented to reject the corresponding elements in the apparatus disclosed in claim 4.

11. With regard to claim 10, Shimizu discloses "the graphic processing apparatus as defined in claim 4 running a graphic processing program causing a computer to function as the normal polygon conversion section, the shadow polygon conversion section, the normal polygon processing section, the back-facing shadow polygon processing section, and the front-facing shadow polygon processing section (*lines 49-55 of column 15: "In the example diagrammed here in FIG. 20, however, a general purpose computer is used and image processing (geometry processing, pixel data generation processing, pixel sorter processing, attribute alteration processing, and rendering processing) is implemented by a software program or programs."*).

12. With regard to claim 11, Shimizu discloses "a program storage medium allowing computer to read, characterized in that the graphic processing program as defined in claim 10 is stored" (*lines 7-12 of column 16: "The recording media for providing the computer programs for executing the processing described in the foregoing include, in addition to such information recording media as magnetic disks and CD-ROMs..."*).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,744,430 to Shimizu in view of U.S. Patent No. 5,517,603 to Kelley et al.

16. With regard to claims 2 and 5, Shimizu discloses the limitations of parent claims 1 and 4, respectively, as well as "the Z-buffer memory and the pixel memory and shadow flag memory have a capacity for one line in one display screen" (*lines 51-53 of column 13 (emphasis added): "When it is determined in step S2 that <u>all of the polygon pixel data for one frame</u> have been stored in the sort buffer 66, step S3 is advanced to..."*). One of ordinary skill in the art would recognize that if the memory has the capacity to store all of the data for one frame then clearly the memory has the capacity for one line of that frame. With regard to claim 2, Shimizu does not expressly disclose "the visual-point coordinate conversion processing section and the hidden surface removal and shadow processing section process per line." With regard to claim 5,

Shimizu does not disclose "the normal polygon conversion section, the shadow polygon conversion section, the normal polygon processing section, the back-facing shadow polygon processing section, and the front-facing shadow polygon section process <u>per line</u>."

17. With regard to claims 2 and 5, Kelley et al discloses "the Z-buffer memory, the pixel memory, and the shadow flag memory have a capacity for one line in one display screen (*lines 24-26 of column 32: "FIG. 12 is a functional block diagram of a stage 2/3 processing unit. A RAM 1201 and a RAM 1202 comprise the dual buffers and consist of one scanline of memory each."; lines 63-66 of column 31: "When performing scanline Z-buffering or operating as a compositing engine, both require at least one complete scanline of memory."*), and "the visual-point coordinate conversion processing section and the hidden surface removing (*lines 17-20 of column 15*) and shadowing processing (*lines 47-50 of column 21; lines 4-7 of column 22*) section processes per line," as recited in claim 2, and "the normal polygon conversion section (*lines 37-40 of column 14; lines 45-47 of column 14*), the shadow polygon conversion section (*lines 39-45 of column 21; lines 45-47 of column 14; lines 18-19 of column 24*), the normal polygon processing section (*lines 17-20 of column 15; lines 45-47 of column 15*), the back-facing shadow polygon processing section (*line 65 of column 21 through line 2 of column 22*), and the front-facing shadow polygon processing section (*lines 54-59 of column 21; lines 2-7 of column 22*) process per line," as recited in claim 5 (*lines 66-67 of column 3: "In the scanline approach the 3-D image is rendered a scanline at a time, rather than an object at a time."; lines 10-13 of column 6: "Utilizing a scanline approach for rendering a 3-D graphical image, alternative rendering device configurations provide scalable rendering performance."*). While Kelley et al does not use the language "<u>one line</u> of shadow flag memory," one of ordinary skill in the art would

recognize the system operates by performing the operations one scanline at a time, and computes a shadow count for each pixel in each scanline from the statement lines 1-4 of column 22: "A volume entirely in front of the pixel will generate one increment and one decrement at that pixel, leaving the shadow count unchanged."

18. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to perform the operations disclosed by Shimizu per line as taught by Kelley et al. The motivation for doing so would have been to provide the system with the flexibility to process the pixels out of order or in parallel. Kelley et al discloses the advantages of scanline independence for "Parallel Rendering Pipelines" in lines 5-20 of column 37. Therefore, it would have been obvious to modify Shimizu with the teachings of Kelley et al to obtain the invention specified in claims 2 and 5.

19. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,744,430 to Shimizu in view of U.S. Patent No. 6,402,615 to Takeuchi.

20. With regard to claim 7, Shimizu shows the limitations of parent claim 4, but does not show "a portable device." Takeuchi discloses a graphics system on "a portable device" (*lines 23-25 of column 22: "Further, it may also be realized using a mobile phone, portable data terminal, car navigation system, or other communications terminal as a platform."*).

21. With regard to claim 8, Shimizu shows the limitations of claim 4 on which claim 8 depends, but does not show "a communication network." Takeuchi discloses "the portable device is connectable to a communication network, and the graphic data is obtained through communications via the communication network" (*lines 14-17 of column 5: "Specifically, for example, it is also possible to use the communications interface unit 109 to download the game*

program from another piece of equipment, not shown, on the network connected through the communications line 111").

22. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the graphics system disclosed by Shimizu on a mobile device that receives graphical data over a network as taught by Takeuchi. The motivation for doing so would have been to provide the user with the flexibility to view the graphical data at convenient location while not overburdening the portable device with the storage requirement of the graphical data. Therefore, it would have been obvious to combine Shimizu with Takeuchi to obtain the invention specified in claims 7 and 8.

(10) Response to Argument

Appellant raises new issues by refocusing the argument to the claim term "hidden surface removal." The arguments presented in subheading I and II of the Appeal Brief filed 3 March 2008 were directed to the claim limitations of obtaining coordinate regions, and Shimizu's layer by layer processing.

Appellant's claims require the step of "obtaining a coordinate region" to be performed "after the hidden surface removal processing is performed." Appellant argues the final rejection and Examiner's Answer "does not address any hidden surface removal process in order to obtain a coordinate region." Appellant's characterization appears to be inconsistent with the language of the claims, or at least not required by the claims. For instance, claim 9 recites the following limitations regarding hidden surface removal, and coordinate regions (emphasis added):

> ***...performing hidden surface removal processing*** *by Z-buffer method on the normal polygons based on the visual point coordinates and the depth values of the normal*

polygons and updating color data and a Z value of each pixel in the pixel memory and the Z-buffer memory based on the processing result;

obtaining a coordinate region *positioned in front of the back-facing shadow polygons when seen from the visual point based on the visual-point coordinates and the depth values of the back-facing polygons and the Z-values* ***after the hidden surface removal processing is performed;***

obtaining a coordinate region *position behind the front facing shadow polygons when seen from the visual point based on the visual-point coordinates and the depth values of the front facing shadow polygons and the Z values* ***after the hidden surface removal processing is performed;....***

Likewise, Claim 1 requires,

a hidden surface removal and shadowing processing section for

> ***obtaining a coordinate region*** *that is positioned behind the front-facing shadow polygons and in front of the back-facing shadow polygons when seen from the visual point based on the visual-point coordinates, the depth values and the Z-buffer memory* ***after hidden surface removal processing by Z-buffer method is performed on the normal polygons****...*

A reasonable interpretation of Appellant's claims is the hidden surface removal supplies the depth (Z) values used in order to obtain the coordinate region because the claim positively recites the coordinate region is obtained after hidden surface removal. As discussed in the Examiner's

answer (5/28/2008), Shimizu discloses obtaining a coordinate region. Furthermore, Shimizu also discloses the coordinate region is obtained *after the hidden surface removal processing is performed*, as required by the claims because the Z-buffer values determined by the hidden surface removal processing are used in the layer-by-layer processing that obtains the region (lines 25-27 of column 21; see also the storing of the Z-buffer values prior to region determination in lines 17-19 of column 19). Thus, Shimizu discloses the claimed limitations.

In response to Appellant's argument that Shimizu does not teach "hidden surface removal in which hidden surfaces are not displayed," it is submitted that Shimizu performs hidden surface removal by determining the Z-values of the closest opaque objects at each pixel then drawing only those objects in the final image. Shimizu's sort preprocessor (Z buffer) 110 determines which objects are in front of the others with respect to a viewpoint based on the depth (z) values (*lines 23-26 of column 21*). Figure 7 illustrates what depth (z) values represent. According to the depth (z) value, portions of opaque objects that are in behind of other opaque objects with respect to the viewpoint are not displayed as shown in Figure 15A and described in lines 64-66 of column 12: "When this is being done, the area 93 of the opaque polygon 92 is not delineated, so that it will not be seen from the view point." The frame buffer processor 83 draws the visible data to frame as described in lines 28-32 of column 17. Thus, Appellant's argument that "hidden surface removal in which hidden surfaces are not displayed" is not taught by Shimizu is not persuasive.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Jason M. Repko

/Jason M. Repko/

Examiner, Art Unit 2628

Conferees:

/Ulka Chauhan/
Supervisory Patent Examiner, Art Unit 2628

/XIAO M. WU/
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